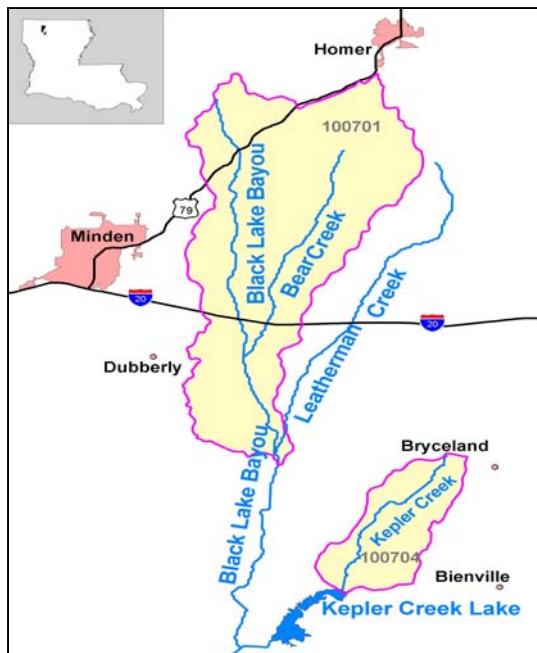


# **TMDLS FOR SEDIMENT/SILTATION, TURBIDITY, AND TDS FOR SUBSEGMENTS 100701 AND 100704 IN THE RED RIVER BASIN, LOUISIANA Fact Sheet**



**Figure 1. Location of impaired subsegments in the Red River Basin included in this report**

Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations (Title 40 of the *Code of Federal Regulations* [CFR] Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for waterbodies that are not meeting water quality standards. A TMDL establishes the amount of a pollutant that a waterbody can assimilate without exceeding its water quality standard for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and nonpoint sources to restore and maintain the quality of the state's water resources.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody, and may include a future growth (FG) component.

This report presents TMDLs that have been developed for turbidity, sediment/siltation, and total dissolved solids (TDS) for Black Lake Bayou (subsegment 100701); and TDS for Kepler Creek (subsegment 100704).

The subsegments are located in the Red River basin in northwestern Louisiana. Black Lake Bayou (subsegment 100701) begins at the headwaters of Black Lake Bayou, located near Minden, Louisiana and ends at the Webster-Bienville Parish line. The watershed for this subsegment is 123 mi<sup>2</sup>, and is primarily forested. Kepler Creek is a tributary to Kepler Creek Lake, located near Bienville, Louisiana. The watershed for Kepler Creek (subsegment 100704) is approximately 26 mi<sup>2</sup>, and is also primarily forest land.

These waterbodies were included on the Louisiana Department of Environmental Quality (LDEQ) final 2004 303(d) list as not supporting their fish and wildlife propagation designated use. These TMDLs were rated priority #1.

The numeric water quality criteria that apply to these impaired subsegments in the Red River Basin and that were used to calculate the total allowable pollutant loads are 79mg/L for TDS (subsegments 100701 and 100704) and 25 NTU for turbidity (subsegment 100701).

TSS is used as a surrogate for turbidity since turbidity cannot be expressed as a load. To achieve a load-based value for turbidity TMDLs, turbidity is often correlated with a surrogate parameter, such as TSS, that can be expressed as a load. For the turbidity and sediment/siltation TMDLs for subsegment 100701, the relationship between turbidity and TSS data collected in the watershed was used to develop a target TSS concentration (i.e., numeric endpoint for the TMDL) from the turbidity water quality criterion. The target TSS concentration calculated from the turbidity criterion of 25 NTU was 13 mg/L.

These TMDLs were developed using a load duration curve method. This method determines allowable pollutant loadings for the range of measured streamflow conditions. There are four steps for applying this methodology. First, a flow duration curve is developed using flows observed at a USGS flow gage on the impaired stream or as close as

possible to it. Next the flow duration curve is converted to a load duration curve by multiplying the measured flow by a target concentration. The target concentration most often is a water quality standard, as in the case of the TDS TMDL, or based on a water quality standard, as in the case of the TSS TMDLs. In the third step observed loads (calculated by multiplying a measured pollutant concentration by the estimated stream flow for that day) are plotted with the load duration curves made in step two. Percent load reductions required to meet waterbody water quality criterion (or associated targets) are determined by reducing the measured concentrations until the observed loads are all less than or equal to the load duration curve value associated with the same flow. In the final step, the TMDL, MOS, FG, WLA and LA are calculated based on the reduced loads.

In TMDL development, allowable loadings for all pollutant sources are determined so that they add up to no more than the TMDL. WLAs account for permitted point source discharges. The LAs include background loadings and human-induced nonpoint sources. An explicit MOS of 10 percent (for the TDS TMDL) and a FG component of 10 percent (for all the TMDLs) were also included. For the TSS TMDLs, the MOS was implicit based on several assumptions, the most significant being treating TSS as a conservative parameter (i.e. assuming it does not settle out). A summary of the TMDLs for each of the subsegments is presented in Table 1.

**Table 1. Summary of TMDLs for subsegments in this report.**

Parameter	Subsegment Number	Subsegment Name	Loads (tons/day)					Percent Reduction Needed
			WLA	LA	MOS	FG	TMDL	
TDS	100701	Black Lake Bayou	0	24.20	3.02	3.02	30.24	24%
	100704	Kepler Creek	0	4.12	0.52	0.52	5.16	16%
Turbidity, sediment/siltation	100701	Black Lake Bayou	0.01	4.47	implicit	0.50	4.98	69%

### For More Information

EPA seeks input on this proposed TMDL, including comments, information, and data from the general and affected public. For additional information on this TMDL project, please contact the EPA staff listed below:

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